

Timing between a
laser & e^- beam/x-ray
pulse

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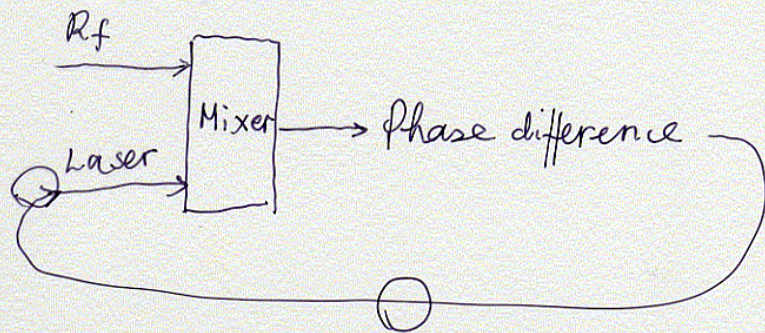
ANL

State of the art

Laser - laser < 10 fs
 $\sim 1-2$ fs

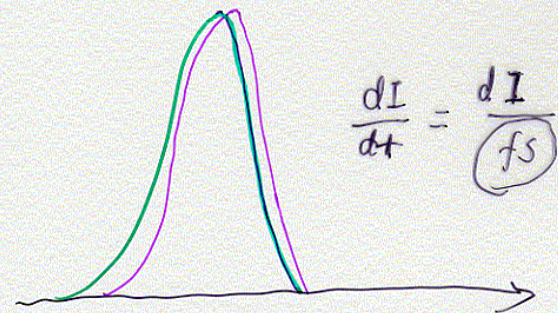
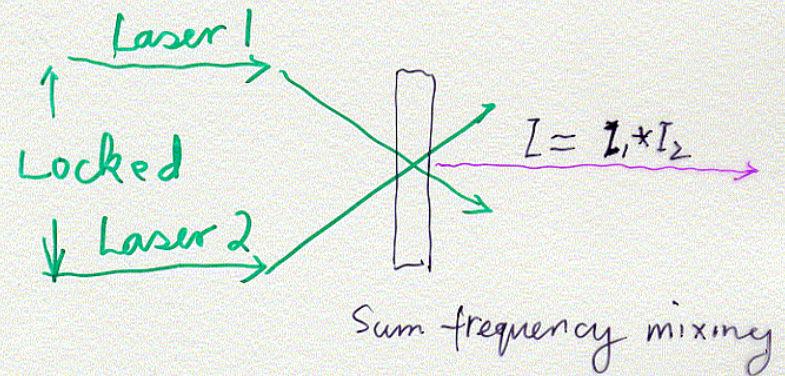
Laser - rf ~ 100 fs
 $\uparrow$
Not electron!

Laser - rf sync & Measurement

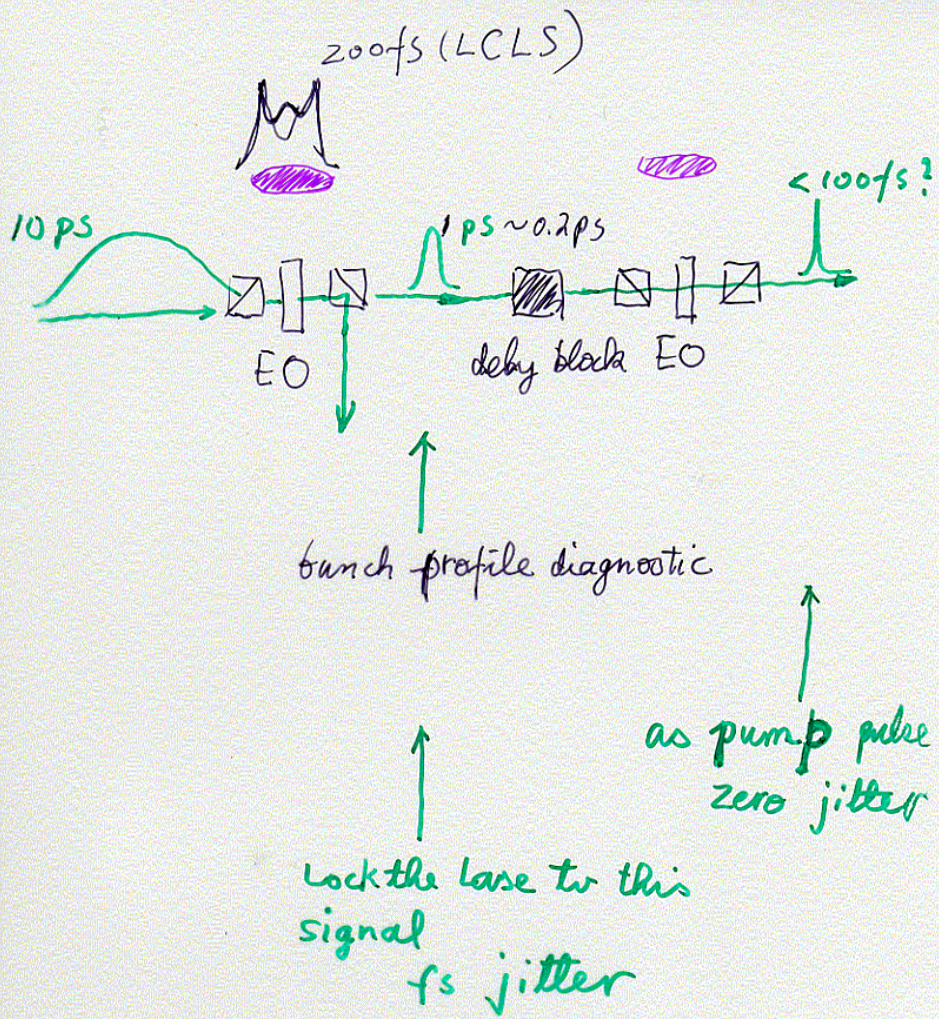


- ① Rf is slow
- ② Laser has to be converted to Rf
- ③ measurement accuracy $\rightarrow$ low
- ④ Only to rf!

Laser - Laser sync & measurement



f_s stability is possible



Need to work out

1. EO crystal response
 - * sensitivity
 - * Frequency band width
 - * durability to e beam
 - * X-ray laser
 - * dependences on bunch profile